

Detail and Context of 2009 Net Cost Report Data Analysis

Overview

The following tables and discussion are a summary of the analysis of as-reported data contained in 2009 Net Cost Reports, submitted pursuant to Title 14 of the California Code of Regulations (CCR) section 18660.10, pertaining to the management of covered electronic waste (CEW). This work was performed by staff of the CalRecycle electronic waste recycling program.

In general, the tables show the reported net costs per pound of recovering and recycling CEW among system participants when the as-reported costs are examined statistically, revealing weighted average, mean, and median costs. They also show the percentage of participating organizations that reported costs lower than the current standard payment rates – \$0.16/lb recovery and \$0.23/lb recycling. Figures are presented in cents per pound unless otherwise noted.

Also presented are a comparison and a discussion of 2009 data with respect to previous years' data.

Analysis

Program compiled “as-reported” 2009 data and examined it in a variety of ways to gain insights into industry costs and arrive at a payment rate recommendation. Wide variations in costs were reported by both collectors and recyclers. This is to be expected due to the range of business practices and scales within the industry. It is also possible that there are errors contained in the reported costs and revenues in some Net Cost Reports. To compensate for the likelihood of extreme instances of faulty data affecting calculated industry averages, program employed statistical tools to exclude outliers in an alternative recalculation.

The following tables include:

1. An analysis of all submitted 2009 Net Cost Reports
2. An analysis of 2009 Net Cost Reports with outliers excluded
3. A comparison of calculated Weighted Average Costs 2005 - 2009

Table 1. Analysis of All Submitted 2009 Net Cost Reports

Preliminary Calculations (All As-Reported 2009 Data)		Weighted Average*	Mean	Median	Percentage Below Standard Payment
Recovery (475)	Revenue	5.3			-
	Cost	21.7			-
	Net Cost	16.5	21.9	13.0	58%
Recycling (44)	Revenue	8.3			-
	Cost	27.0			-
	Net Cost	18.6	21.8	19.5	59%
Combined Net Costs		35.1	43.7	32.5	-

* The weighted average reflects the overall industry cost per pound, calculated as if the industry operated as a single organization – i.e., by dividing the collective reported costs and revenues (total net cost) by total pounds recovered and/or recycled by all participants in the study sample

The above Table 1 shows the analysis of as-reported 2009 net costs for recovering and recycling covered electronic waste using all reports submitted by CEW system participants.

The data reveal that on the basis of a simple average (mean) the reported costs of recyclers were slightly below the standard recycling payment rate, while the reported collectors' costs were substantially higher than the recovery payment rate. The weighted average showed that the recyclers' costs were well below the recycling payment rate, but the collectors' costs remained slightly above the current recovery payment rate. However, an examination of the median (mid-point of all reported cost) in Table 1 shows that the payment rates exceeded the reported costs for most collectors (58%) and most recyclers (59%).

Table 2. Analysis of 2009 Net Cost Reports With Outliers Excluded

Re-Calculations (As-Reported 2009 Data w/o Outliers)		Weighted Average	Mean	Median	Percentage Below Standard Payment Rate
Recovery (445)	Revenue	5.7			-
	Cost	20.0			-
	Net Cost	14.4	14.0	12.0	61%
Recycling (43)	Revenue	8.3			-
	Cost	27.0			-
	Net Cost	18.7	22.4	20.0	60%
Combined Net Costs		33.1	36.4	32.0	-

The above Table 2 shows a re-analysis of as-reported 2009 net costs for recovering and recycling covered electronic waste (CEW) using a slightly smaller sample of system participants (92.5% of total reports). In this case, those collectors who reported recovery net costs more than one standard deviation above or below the collective mean were excluded as outliers.

The wide range of reported net costs and/or net revenues (-\$4.20 to \$0.84 per pound) provide a standard deviation of \$0.44, which was then added and subtracted from the mean of -\$0.22 per pound. Thirty collector reports exceeding -\$0.66 (representing 2.9 million pounds of CEW recovered at a reported average net cost of -\$1.19 per pound) were removed from subsequent calculations. Six collector reports exceeding \$0.22 (representing 166,000 pounds of CEW recovered at a reported average net revenue of \$0.38 per pound) were also excluded.

Additionally, one recycler report was excluded due to identified deficiencies (only a small percentage of the CEW processed and claimed during the year was included in the report, and an overall calculated net revenue of \$0.01 per pound was reported).

This new perspective shows costs reported by collectors as lower than the existing recovery payment rate when analyzed as either a mean or weighted average. This look at the data also moves the percentage of collectors whose reported costs are covered slightly higher (61%). The recycler cost data did not change substantially, with the percentage of recyclers whose reported costs are covered moving slightly higher (60%).

Table 3. A Comparison of Calculated Weighted Average Costs 2005-2009

Comparisons of Weighted Average Net Cost	2005	2006	2007	2008	2009
Recovery	17.1	16.7	14.8	16.6	14.4
Recycling	25.2	21.5	21.0	22.8	18.7
Combined	42.3	38.2	35.8	39.4	33.1

The above Table 3 compares the calculated weighted average net costs for CEW recovery and recycling as reported over the life of the program. This table reflects the re-calculated 2009 costs that exclude the outlier data discussed in relation to Table 2. As can be seen, the 2009 weighted averages continue the trend of lowering costs that was evident in 2005 through 2007.

Some stakeholders have suggested that CalRecycle consider factoring in the apparently much higher costs reported in 2008 when determining whether to adjust payment rates, especially since payment rates are set for two-year intervals under existing statute. Because 2008 was not a year within which payment rates could be adjusted, an in-depth analysis of 2008 data had not been previously performed beyond simple mean calculations. Program staff has performed a re-evaluation of 2008 data and believes that such an inclusion is not warranted for several reasons:

- 2008 data theoretically reflects conditions in the more distant past than 2009 data and may not have much relevance to predicting costs in the near future;
- The DOF validation of 2008 Net Cost Reports raised some concerns about the quality of reported data;
- A standard deviation outlier exclusion re-calculation of 2008 data would lower recovery costs averages to levels similar that seen in the 2009 data re-calculations;
- Average (mean) recycling costs reported by the six largest volume recyclers (those claiming more than 10 million pounds of CEW) were 28.3 cents per pound, a surprisingly high number that was approximately double that of medium sized recyclers (those claiming between 1 million and 10 million pounds of CEW), who reported an average of 14.9 cents per pound recycling costs. This substantial difference is difficult to reconcile in term of economies of scale, especially when compared to the 19.5 cents per pound mean reported in 2009 for the four recyclers that claimed over 10 million pounds.

Conclusion

The calculated weighted average net costs per pound to recover and recycling CEW in California based on data submitted in required Net Cost Reports reflecting collector and recycler operations during 2009 do not support increasing or decreasing the standardized statewide payment rates.

Furthermore, program believes that it is valid to remove from net cost calculations outlier data that would unduly skew the average.

The reported costs appear to be slightly less than the levels upon which payment rates were last adjusted, which could support a reduced payment rate. However there is substantial uncertainty about the direction and scale of costs, especially as faced by recyclers relating to CRT glass management, in the future. This uncertainty, upon which the recommendation of no change in rates is partly based, is discussed further in Attachment 1 to this Request for Approval.